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10/644,022

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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/644,022

**Applicant(s)**

KAWATO ET AL.

**Examiner**

William J. Klimowicz

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 13, 14 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 11, 15, 16 and 18-22 is/are rejected.
- 7) ☒ Claim(s) 9 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Election/Restrictions***

Applicants' election with traverse of Group II, Specie I (corresponding to Figs. 6-14B) in the reply filed on May 24, 2006 is acknowledged. The Applicants' traversal is stated as follows:

In setting forth the requirement for restriction, the Examiner indicates that Inventions I and II are related as process of making and product made and sets forth the requirements for showing distinctness in accordance with MPEP §806.05(f) which requirements are in terms of (1) the process as claimed and (2) the product as claimed. The Examiner contends that in the instant case, the product can be made by a process such as wet etching, etc. Irrespective of the contentions by the Examiner, by the present amendment, dependent claim 22 has been presented which corresponds to the features of Invention I of claim 17, dependent upon claim 1 of Invention II and requiring the feature of an ion milled etched main pole, such that applicants submit that contrary to the Examiner's contention, the product as claimed in claim 22 of an "ion milled etched main pole" when considered with parent claim 1 of Invention II, can not be made by another and materially different process such as "wet etching" than that of the process as claimed in claim 17 of Invention I. Thus, applicants submit that the Examiner can no longer show distinctness in accordance with MPEP §806.05(f) and the requirement for restriction should be withdrawn.

See Applicants' remarks, at page 8, filed May 24, 2006. Underling is Applicants' original emphasis.

This is not found persuasive because the Examiner maintains that added claim 22 is drawn to a product *per se*, irrespective of the manner in which it is created. That is, the product by process limitations in claim 22 is directed to the ***product per se***, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17(footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessman*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289;

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and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final structure of the product “gleaned” from the process limitations or steps, which must be determined in a “product by process” claim, and not the patentability of the process limitations. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Additionally, it is noted that the Applicants did not traverse on the ground that the species and/or Groupings of inventions I and II are not patentably distinct. If the Applicants were to traverse on the ground that the species and/or Groupings of inventions I and II are not patentably distinct, the Applicants should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. If the Applicants were to include such a statement, the election requirement would be withdrawn. In either instance, however, if the Examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. § 103 of the other invention.

The requirement is still deemed proper and is therefore made FINAL.

Claims 13, 14 and 17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on May 24, 2006.

### ***Objection to Abstract***

The abstract of the disclosure is objected to because its length exceeds 150 words (The Examiner has counted 160 words). See MPEP 608.01(b), which cites 37 CFR 1.72 (b), and states:

A brief abstract of the technical disclosure in the specification must commence on a separate sheet, preferably following the claims, under the heading "Abstract " or "Abstract of the Disclosure." The ***abstract*** in an application filed under 35 U.S.C. 111 ***may not exceed 150 words in length***. The purpose of the abstract is to enable the United States Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure. The abstract will not be used for interpreting the scope of the claims.

Emphasis in bold italics added. Thus, the abstract must be amended so as to not exceed the 150 word limit. Correction is required.

### ***Specification***

The disclosure is objected to because of the following informalities:

With regard to page 18, line 24, and page 23, line 23, the term "anisotropy" should be changed to the term --anisotropy--.

With regard to page 23, line 20, the word "server" should be changed to the word --serve-

-.  
Appropriate correction is required.

### ***Claim Objections***

Claims 8, 9, 16, 18 and 19 are objected to because of the following informalities:

As per claim 8, line 3, the phrase “the medium facing surface” should be changed to the phrase --a medium facing surface--.

As per claim 9, line 3, the word “However” should be deleted or replaced by the word --wherein-- or --whereby--.

As per claim 16, line 2, the phrase “return path is two section” should be properly reworded.

As per claim 16, line 3, the phrase “and an auxiliary poles” should be reworded as --and an auxiliary pole--.

As per claim 16, line 3-4, the phrase “said substrate” lacks proper antecedent basis.

As per claims 18 and 19, the phrase “said write element” as found in the last line of each of the respective claims, lacks proper antecedent basis.

As per claims 18 and 19, line 18 of each respective claim, the term “anisotrophy” should be changed to the term --anisotropy--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 20, the phrase “wherein the center distance of said high saturation flux density layers of said thin film magnetic head is as small as twice of the distance between said main pole and said keeper layer surface during read and write operation” is vague and ambiguous. More concretely, it is indeterminate as to what “the center distance of said high saturation flux density layers of said thin film magnetic head” is in reference to. Is it the center-to-centre distance of each layer? Is it the center to ABS distance? Such an ambiguity renders the scope of then claim unascertainable.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 11, 15, 18, 19 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Gill (US 7,057,837 B2).

As per claims 1, 2, 18 and 19, Gill (US 7,057,837 B2) discloses a thin film perpendicular magnetic recording head comprising a main pole (302), a return path for supplying a magnetic

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flux to said main pole (302) (see path of arrows in FIG. 3a), and a conductive coil (308) for excitation of said main pole (302) and said return path, wherein said main pole (302) has a magnetic pole width of 200 nanometers or less (e.g., see COL. 2, lines 23-26), and said main pole possesses a magnetic multilayer made up of a high saturation flux density layer (e.g., FM1-FM4 - see FIG. 4) and a low saturation flux density layer (e.g., APC1-APC3 - see FIG. 4), said high saturation flux density layer contains an Fe--Co alloy (e.g., see COL. 5, line 28 *et seq.*) (as also required by claim 4), and the direction of magnetism of a pair of said high saturation flux density layers (FM1-FM4) facing each other by way of said low saturation flux density layer (e.g., APC1-APC3 - see FIG. 4) is an antiparallel arrangement in said magnetic multilayer.

As per claim 22, wherein said main pole includes said magnetic multilayer comprised of said high saturation flux density layer (e.g., FM1-FM4 - see FIG. 4) and said low saturation flux density layer (e.g., APC1-APC3 - see FIG. 4) on a substrate (e.g., the slider *per se*).

As per claim 22, the product by process limitation in this claim (i.e., "said main pole is an ion milled etched main pole") is directed to the product *per se*, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17(footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessman*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process limitations or steps, which must be determined in a "product by process" claim, and not the patentability of the process limitations. Moreover, an old or obvious product produced by a new method is not a



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patentable product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Additionally, as per claims 2 and 18, the thickness of said low saturation flux density layer (e.g., APC1-APC3 - see FIG. 4) is within a range of 0.5 nanometers or more to 5 nanometers or less, and said high saturation flux density layer (e.g., FM1-FM4 - see FIG. 4) has a thickness from 10 nanometers or more to 50 nanometers or less (e.g., see COL. 5, lines 28-36), and as per claim 3, the thickness of said high saturation flux density layer (e.g., FM1-FM4 - see FIG. 4) is 10 nanometers or more to 20 nanometers or less (e.g., see COL. 5, lines 28-36).

As per claim 5, said high saturation flux density layer is ferromagnetic material (e.g., FeCo), and said low saturation flux density layer is non-magnetic layer (e.g., see COL. 5, lines 28-36),.

As per claim 6, wherein the number said high saturated flux density layers (e.g., FM1-FM4 - see FIG. 4) contained in said magnetic multilayer is four layers or more (e.g., see COL. 5, lines 42-45), and as per claim 7, wherein the number said high saturated flux density layers (e.g., FM1-FM4 - see FIG. 4) contained in said magnetic multilayer is ten layers or more (e.g., see COL. 5, lines 42-45).

As per claim 8, wherein said magnetic multilayer is arrayed in parallel in a direction perpendicular to the medium surface facing the main pole (302) - note that in FIG. 4, the ABS is on the rightmost facing vertical surface.

As per claim 11, wherein the crystalline structure of said low saturation flux density layer (APC) is mainly a face-centered cubic structure (i.e., Iridium has a fcc crystalline structure - COL. 5, line 34).

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As per claim 15, a read head (301) is provided possessing a magnetoresistive effect sensor (334) for converting the spatial distribution of the stray magnetic field to a change in resistance or a change in voltage.

Additionally, as per claims 18 and 19, Gill (US 7,057,837 B2) further discloses a magnetic disk drive (100) comprising a magnetic recording medium (112), the aforementioned thin film perpendicular magnetic recording head, a positioning device (127) for positioning said thin film perpendicular magnetic recording head on said magnetic recording medium (112), and said magnetic disk drive (100) supplies read and write electrical current to said thin film perpendicular magnetic recording head and also encodes stored data and decodes reproduced data, and said magnetic recording medium is composed of a recording layer (312) made from ferromagnetic material of high coercive magnetic force for holding the written data by uniaxial magnetic anisotropy and, a flux keeper layer (314) of low magnetic coercivity for assisting in generating a magnetic recording field by an interactive effect with said write element (302).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (US 7,057,837 B2).

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See the description of Gill (US 7,057,837 B2), *supra*.

As per claim 10, Gill (US 7,057,837 B2) remains silent with respect to the material and/or crystalline structure of said high saturation flux density layer as being mainly a body-centered cubic structure.

Official notice is taken that layers of high saturation flux density having a BCC crystal structure are notoriously old and well known and ubiquitous in the art; such Officially noticed fact being capable of instant and unquestionable demonstration as being well-known.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the FM1-FM4 films of Gill (US 7,057,837 B2) as being of a conventional and ubiquitous material and crystal structure of body-centered cubic structure..

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the FM1-FM4 films of Gill (US 7,057,837 B2) as being of a conventional and ubiquitous material and crystal structure of body-centered cubic structure since it is well known that such crystalline structures used in the context of magnetic poles provide advantageous large crystal magnetic anisotropy and high positive magnetostriction, as is well known, established and appreciated in the art. No new or unobvious result is seen to be obtained by providing a conventional and ubiquitous material having a BCC crystalline structure since such advantages are well known to an artisan of mere ordinary skill in the magnetic head art.

As per claim 16, wherein said return path is two sections, comprised of a yoke section (at (308)) for sending flux directly to said main pole (302), and an auxiliary pole (304), and having a surface facing a substrate.

As per claim 16, however, Gill (US 7,057,837 B2) remains silent to wherein the perpendicular recording head yoke section and auxiliary pole section are made from ferromagnetic material possessing a saturation flux density lower than said high saturation flux density layer (i.e., the writing poletip).

Official notice is taken that magnetic yoke structures having a flux saturation density in areas lower other than the saturation flux density in the write poletip, are notoriously old and well known and ubiquitous in the art; such Officially noticed fact being capable of instant and unquestionable demonstration as being well-known.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the perpendicular recording head yoke section and auxiliary pole section of Gill (US 7,057,837 B2) as being are made from ferromagnetic material possessing a saturation flux density lower than said high saturation flux density layer (i.e., the writing poletip), as is known in the art.

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the perpendicular recording head yoke section and auxiliary pole section of Gill (US 7,057,837 B2) as being are made from ferromagnetic material possessing a saturation flux density lower than said high saturation flux density layer (i.e., the writing poletip), as is known in the art in order to limit the choking or limiting of flux at the writing surface (i.e., at the write pole) by providing a high saturation flux density material, relative to other portions of the flux return path, as is well known, established and appreciated in the magnetic head art.

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Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (US 7,057,837 B2) in view of Carey et al. (US 2003/002023 A1).

See the description of Gill (US 7,057,837 B2), *supra*.

As per claim 21, Gill (US 7,057,837 B2) remains silent with respect to wherein said flux keeper layer of said magnetic record medium is composed of a magnetic multilayer including said high saturation flux density layers and said low saturation flux density layer; or a magnetic multilayer including a ferromagnetic layer and a nonmagnetic layer; or a magnetic multilayer including a ferromagnetic layer and an antiferromagnetic layer.

Carey et al. (US 2003/002023 A1), however, disclose a conventional perpendicular recording medium used expressly in association with the perpendicular recording head disclosed by Gill (US 7,057,837 B2), wherein a magnetic record medium (see cover page) is composed of a magnetic multilayer including said high saturation flux density layers (11-14) and said low saturation flux density layer (21-23); or a magnetic multilayer including a ferromagnetic layer (11-14) and a nonmagnetic layer (21-23).

Given the express teachings and motivations, as espoused by Carey et al. (US 2003/002023 A1), it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the recording medium of Carey et al. (US 2003/002023 A1), in lieu of the recording medium of Gill (US 7,057,837 B2).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the recording medium of Carey et al. (US 2003/002023 A1), in lieu of the recording medium of Gill (US 7,057,837 B2) in order to, *inert alia*, “provide[] a soft magnetically permeable flux return path without undesirable domain walls and associated media noise, with

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controllable permeability and minimization of saturation of the upper ferromagnetic layers.”

See abstract of Carey et al. (US 2003/002023 A1).

### ***Allowable Subject Matter***

Claims 9 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

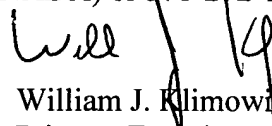
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (571) 272-7577. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



William J. Klimowicz  
Primary Examiner  
Art Unit 2627

WJK